

BRYCE CANYON NATIONAL PARK (BRCA)

Size 14,502 hectares (35,835 acres)

Park History and Purpose Bryce Canyon is known internationally for its unusual scenic beauty and scientific interest and importance found in the brightly colored and towering formations of limestone, clay, and silt, which were created primarily by the water's erosive forces. The formations, which range in shades of red and white, are a brilliant contrast to the colorful lowlands east of the park and the timbered hillsides and plateaus to the west. The vast, panoramic views from within the park to the outlying valleys and canyons add an outstanding quality to the parks aesthetic values. The park also contains a rich cultural background ranging from numerous archeological sites to nationally registered historic architecture.

Bryce Canyon National Park was originally established as a National Monument in June of 1923 by Presidential Proclamation (number 1664). The purpose was to reserve certain lands within the Powell National Forest known as "Bryce Canyon" because of unusual scenic beauty, scientific interest and importance. The proclamation identified that the public interest will be promoted by reserving as much land as necessary for the proper protection as a national monument. In June of 1924 additional legislation established Utah National Park. At this time all the lands within the boundary of the original National Monument were acquired by the Federal government "for the benefit and enjoyment of the people" and were hence forth subject to the provisions of the NPS Organic Act of 1916. In February 1928 the name was changed to Bryce Canyon National Park and administration transferred to the NPS in September. During the intervening months between February and September, eleven sections of land were added to BRCA bringing the size to 5,860 hectares (14,480 acres).

President Hoover authorized a proclamation (number 1930) in January 1931 that more than doubled the park's size resulting in a new land base of 12,367 hectares (30,560 acres). This expansion extended boundaries south and west along the Paunsaugunt Plateau to include additional scenic overlooks as far south as Rainbow Point. Again in 1931, President Hoover increased the size of BRCA by presidential proclamation (number 1952). The latest expansion extended northeast to include scenic points as far north as Shakespeare Point and resulted in a land base of 35,835 acres.

The purpose and significance of BRCA is described in the enabling legislation, the General Management Plan (NPS 1987), and the Statement for Management (NPS 1993a). BRCA is best known for hoodoos, erosional features carved from the edge of the Paunsaugunt Plateau in southern Utah. Here routine events such as freeze-thaw cycles, water run-off and mineral oxidation combine in unique ways to create uncountable oddly shaped and multi-hued fins, spires, grottoes and windows from the Claron limestones.

The park's location at the top of the Grand Staircase and the clarity of the air provide visitors the opportunity to regularly experience panoramic vistas of over 161 km. (100 miles). The absence of human development and artificial light creates conditions for unimpeded distant views by day and unparalleled viewing of the brilliant night skies. In

conjunction with both public and private lands the park provides the unique opportunity for visitors from around the world to observe wildlife in the peaceful settings of three forest community types (pinyon/juniper, ponderosa pine or a fir/spruce/aspen mixed). A diverse range of recreational opportunities provide visitors an understanding of the park's role in the area's cultural history.

Location Bryce Canyon National Park is located approximately 129 kilometers (80 miles) northeast of Cedar City, Utah on the Paunsaugunt Plateau.

Elevation Elevation ranges from approximately 1,859 meters (6,100 feet) in the eastern lowlands to 2438 meters (8,000 feet) at headquarters to 2,774 meters (9,100 feet) at the park's southern end. Annual precipitation averages 381 millimeters (15 inches) with an average annual snowfall of 254 centimeters (100 inches) at headquarters.

General Description BRCA is a long, roughly rectangular-shaped area located on the Paunsaugunt Plateau's eastern rim. The Paunsaugunt Plateau is situated on the southwest edge of the Colorado Plateau at the head of the Paria River. The Paunsaugunt is an upthrust fault block forming the highest step of the Grand Staircase along the north side of the Colorado River. The fault forming the east scarp of the Paunsaugunt exposes the Pink Cliffs, a series of spectacular formations of Cretaceous age limestone, sandstone, and shale of varied color and form. The deeply eroded cliffs form a series of fourteen canyons/amphitheatres along the rim. Above the escarpment, the plateau dips gently to the west draining surface runoff in to the East Fork of the Sevier River. Plateau vegetation ranges from ponderosa pine forests in the north to dense mixed conifer forests in the south. The forests are interspersed with a dozen or more mountain meadows dominated by late seral sagebrush communities. Greenleaf manzanita is very abundant in forest areas with low tree stem density. Aspen is sparse at the southern end. All stands are heavily encroached by conifer and are currently very small in size. Below the rim, ponderosa pine, Utah juniper, and pinyon pine dominate the overstory vegetation. A few cottonwood trees are found along streams fed by small springs at the base of the Pink Cliffs.

Flora Vegetation communities can be categorized in to six groups: subalpine open and semi moist meadows; fir-spruce-aspen forests; high plateau sagebrush; ponderosa pine forest; pinyon-juniper woodland; and The Breaks. The amount of soil moisture present is the most important factor in the extent and profusion of flowering plants associated with each plant community. There are endemic plant species. However, there are a number of species on the fringe of their distribution and thus considered rare in this area. The park supports an estimated 522 plant species (Foster 1995). New species are discovered periodically.

Fauna Fauna is typical of Colorado Plateau species. Approximately 290 species of amphibian, reptile, bird and mammal species have been observed. Amphibians are rarely observed but are found in selected locations near water. The short-horned lizard and the desert whiptail are the most common reptiles seen. Visitors in the breaks periodically observe the Great Basin rattlesnake. Common bird species on the plateau include common ravens, Steller's jays, dark-eyed junco, and mountain chickadees.

Below the rim, swallows of several species, swifts and scrub jays are regularly observed. The red-tailed hawk is the most common raptor. Mule deer, golden-mantled ground squirrel, and Uinta chipmunk are the most common mammals observed. Utah prairie dogs are found in most mountain meadow habitats. Visible signs of mountain lion and black bear are regularly found but these species are observed infrequently.

Aquatic Features BRCA's location along the Paunsagunt Fault provides a unique opportunity for springs to surface as ground water encounters the Tropic Shale Formation. Thirty-three springs have been located, of which twenty have sufficient flow to measure (Ott 1996). Few streams actually carry surface water year round. The ones that do are extremely small during portions of the year.

Unique Features and Species of Special Concern

Hoodoos Rock spires left behind by erosional forces of wind and water along the plateau's eastern edge.

Utah prairie dogs Utah prairie dogs are listed as threatened species under the Endangered Species Act. Numbers have fluctuated between 45 and 225 since they were re-introduced in 1975.

Rare plants Currently there are 23 taxa considered sensitive These include Ward milkvetch (*Astragalus wardii*), Reveal Indian paintbrush* (*Castilleja parvula* var. *revealii*), yellow-white catseye* (*Cryptantha ochroleuca*), Cedar Breaks biscuitroot (*Cymopterus minimus*), Abajo daisy (*Erigeron abajoensis*), Jones' gentian (*Gentianella tortuosa*), Cedar Breaks goldenbush (*Haplopappus zionis*); Jones golden-aster (*Heterotheca jonesii*), king's ivesia (*Ivesia kingii*), intermountain ivesia (*Ivesia sabulosa*), Bryce bladderpod (*Lesquerella rubicundula*), little desert parsely (*Lomatium minimum*), Jones' locoweed (*Oxytropis oreophilla* var. *jonesii*), Paria breadroot* (*Pediomelum pariense*), Red Canyon phlox (*Phlox gladiformis*), Red Canyon beardtongue* (*Penstemon bracteatus*), Markagunt beardtongue (*Penstemon leiophyllus* var. *leiophyllus*), lepidota twinpod (*Physaria chambersii* var. *membranacea*), podunk groundsel (*Senecio malmstenii*), Peterson catchfly* (*Silene petersonii*), Wyoming rock-tansy (*Sphaeromeria capitata*) and least townsendia (*Townsendia minima*).

Most of these plants occur in the unique "breaks" community environment. Populations of plants indicated with an asterisk have been monitored over time and seem little affected by the current level and location of tourism activities. More surveys are needed within remote areas to determine the extent of each rare plant species. These surveys will also look for new occurrences of rare plants found in similar habitats outside the park boundary.

Bald Eagles and California Condors Periodic observations of bald eagles and California condors have been recorded. These two species are protected under the Endangered Species Act but have never been observed nesting at BRCA.

Bristlecone Pine The Bryce Canyon Breaks is the lowest elevation site in the distribution of this species.

Aspen Aspen clones have slowly become decadent as their habitat is encroached by conifers through natural succession. Fire suppression actions have removed a source of disturbance that would have resulted in regeneration of aspen at the south end.

Resource Management Concerns

Human landscape impacts have seriously diminished many Bryce Canyon resources and natural processes. Plant communities in some locations have been heavily trampled, and in other areas they have changed dramatically due to aggressive fire suppression activities at the turn of the 20th century. The park has focused on meeting visitor needs at the expense of basic prevention and correction of resource deterioration, quantitative resource inventorying and monitoring, and planning for mitigation/restoration actions. Past total fire suppression policies have caused significant changes to plant communities resulting in unnatural species abundance and an altered assemblage of species diversity.

The threatened Utah prairie dog has colonized most mountain meadow habitats and in some cases can be found in close proximity to human developments. A conservation strategy is currently being pursued to protect this threatened species and public safety.

Recreation Use Annual visitation since 1980 has significantly increased. The annual average rate of increase in visitation was 7.5 %. Parking turnouts along the Rim Road provide many opportunities for visitors to enjoy scenic vistas. Annual visitation to BRCA reached a peak of 1.7 million visitors in 1996, with only slightly lower visitation rates since.

Visitation is primarily concentrated within the 252-acre developed area. Most visitors never go south of the main amphitheater, and average visitation time is less than a half day. Consequently, very high visitor density in the main amphitheater area has resulted in trampling of vegetation, heavy social trailing, wildlife attracted to human food sources, and individual deer and rodents very habituated to human activities that could become a threat to visitor safety. A small portion of recreational use includes backcountry hiking and overnight camping.

Land Use Impacts Cattle and sheep grazing was one of the earliest known human impacts on the land. Grazing was well established from Mormon settlement in the 1870s. Grazing on the plateau occurred during the summer months while ranchers moved their stock to lower elevations in winter. The Forest Service issued grazing permits from 1903 until 1929. Leniency toward resource stewardship and forage consumption was general practice (Buchanan 1960). From 1907 to 1940, forage abundance declined "inexorably" (Scrattish 1985).

Timber harvesting in the area of the park began in the late 1800s and by 1890 a sawmill was located in the park's northeast portion. Harvesting occurred in Henderson Canyon. The mill was moved to the mouth of Bryce Canyon. By 1896 another sawmill was

constructed in Dave's Hollow west of the present headquarters building. No conservation measures were implemented. This mill specialized in fine finished lumber, much of which was shipped to Salt Lake City. Harvesting occurred throughout the park's northern portion.

In 1889, a stock company was organized in Tropic to divert water from the East Fork of the Sevier River to the Paria River Valley to irrigate fields. The Tropic Ditch now diverts water through 15 kilometers (9 miles) of canal and over the rim into Water Canyon. The ditch opens an avenue for aquatic life to migrate from the Great Basin to the Colorado River Basin.

Exotic Plant Species There are 61 exotic plant species known in BRCA; most populations are small. Systematic surveys were begun in 1998 to identify and quantify exotic plant populations. While the survey is not complete, areas with the highest probability of invasion have been surveyed. The species of most concern include musk thistle (*Carduus nutans*), Canada thistle (*Cirsium arvense*), Russian thistle (*Salsola iberica*), mullein (*Verbascum thapsus*), and cheatgrass (*Bromus tectorum*).